Unsolved Issues of Catheter and Surgical Ablation of Atrial Fibrillation

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HRJ-2

Predictors of the Recurrence of Atrial Fibrillation after Radiofrequency Catheter Ablation Cardiovascular Division, Tsukuba University Hospital,

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Radiofrequency catheter ablation of atrial fibrillation (AF) has become a successful treatment option for patients with both paroxysmal and persistent AF. Despite the technical refinements of the ablation procedures and operator experience, the recurrence rate of AF after the ablation is still relatively high. Published studies suggest that approximately 33 % to 86 % of patients undergoing catheter ablation of AF have freedom from the recurrence of AF, with 30% to 40% requiring a second ablation procedure. Therefore, identifying predictors of success in maintaining sinus rhythm after the ablation may help improve the patient selection for this procedure to reduce the health care costs and avoid exposing patients to unnecess.

HRJ-3

Surgical AF Ablation : Does the Use of RF Increase the Incidence of Post-OP AT ?
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Objective: Atrial tachycardia (AT) is a common complication with severe symptoms that occurs after the maze procedure. The use of radiofrequency (RF) ablation devices may fail to create a transmural lesion and increase the incidence of AT.

Methods : The incidence of postoperative AT was examined in association with the surgical technique to create conduction block at each lesion in 318 patients who underwent the maze procedure. The underlying heart disease was valvular in 273 patients (86 %) and the mode of AF was paroxysmal in 63 patients, persistent in 5, and long-standing persistent in 250. The technique used for the PVI was a cut-andsew in 13 patients, cryothermia in 84, and RF in 221. The technique used for creating the coronary sinus (CS) lesion was cryothermia in 152 patients, RF absary procedures and related complications.

Several parameters, such as a female gender, persistent AF (duration of sustained AF), left atrial size, left ventricular ejection fraction, structural heart disease, hypertension, inflammation, concomitant metabolic syndrome, and termination of AF during ablation have been reported as predictors of AF recurrences after ablation. This review would overview these predictors, point out the limitations of previous studies, and introduce recently reported predictors, such as concomitant chronic kidney disease, obstructive sleep apnea, and atrial fibrosis, with our data. The inhomogeneous patient groups and/or no or little consistency in the ablation methods, definitions used for AF recurrence, or total duration of the follow-up period of previous studies seem to make the identification of definite and useful predictors for recurrent AF difficult. Further studies on more homogenous patient subgroups, ablation strategies, and study protocols may be needed to clarify that.

lation in 125, and a combination of these or others in 39. All the patients who developed AT were examined by cardiologists and underwent an electrophysiological study and electro–anatomical mapping to determine the mechanism of the AT.

Results : Recurrence of AF was observed by an ECG or Holter monitoring in 34 patients (11%). Besides AF, AT occurred in 26 patients (8.4%) at 1–180 months (median, 24) postoperatively. The number of AT morphology ranged from 1 to 5. The mechanism of the AT was macro-reentry due to incomplete ablation at the CS in 18 patients (69%), focal activation in 9 (including 3 with also macro-reentrant ATs), and undetermined in 1. The ATs were successfully ablated in 22 patients (85%). There was no significant difference in the incidence of AT due to incomplete CS ablation between the different ablative techniques (p=0.99). The incidence was 5.4% after cryothermia and 3.3% after RF ablation during a 6–year postoperative period.

Conclusion: The majority of the postoperative ATs were associated with an incomplete CS ablation. RF ablation equally creates a conduction block to cryo-thermia and does not increase the incidence of postoperative AT.

HRJ-4

Catheter Ablation of Complex Atrial Tachycardia after Catheter and Surgical Ablation of Atrial Fibrillation University of Oklahoma Health Sciences Center, USA O Hiroshi Nakagawa

Introduction : We tested a new mapping system (Rhythmia Medical) for high resolution (HR) automated electro-anatomical mapping (HRAM) in patients with macroreentrant right and left atrial tachycardia (Macro-AT) or atrial flutter (AFL). Methods : The system uses an 8F deflectable catheter with basket array (1.6 cm diam) of 8 splines of 8 electrodes (2.5 mm spacing), totaling 64 electrodes. The system automatically generates chamber geometry and a HR activation map using all electrograms (EGMs) recorded within 5 mm of the chamber surface. The system automatically acquires EGM and location information based on EGM stability and respiration phase. In 19 patients with LA Macro-AT (7 pts), RA Macro-AT (2 pt), Typical AFL (6 pts) or

AF (4 pt), HRAM were obtained during Macro-AT or AFL (12 pts), AF (4 pts), or CS pacing before and after subeustachian isthmus ablation (3 AFL pts, 2 maps each). Conventional point-by-point 3D maps were also obtained in 8 pts during Macro-AT, AFL or CS pacing.

Results : The new system produced very HR maps from 6026 ± 3506 EGMs, obtained in only 11.5 ± 4.5 min. Distance between EGM sites was only 1.8 ± 1.0 mm. Compared to conventional point-by-point maps in 8 pts, HRAM included more EGM sites (7128 ± 1739 vs 398 ± 58), had higher resolution, and required less time (10 ± 3 min vs 32 ± 3 min). HRAM successfully identified the channel in AT circuit and confirmed isthmus block in AFL pts.

Conclusions : The new HRAM system accurately and quickly identified the RA or LA macroreentrant circuit, AFL circuit and confirmed isthmus block after AFL ablation.